04/31267

33851/S696

SYSTEM AND METHOD FOR IMPLEMENTING A TWO-LAYER Z-RANGE BUFFER

ABSTRACT OF THE DISCLOSURE

A system and method for implementing a z-range buffer during the generation and display of three-dimensional graphical images. The display screen is partitioned into a plurality of display blocks. For each display block, the z-range buffer stores minimum and maximum depth values (z-values) of a front layer of the block and a back layer of the block. The z-range buffer further stores a bitmask value where each bit in the bitmask associates a pixel in the block to either the front layer or the back layer. When a new triangle is to be displayed, the minimum and/or maximum z-values of the pixels of the triangle are compared with the minimum and/or maximum z-values of the front layer and/or the back layer. By making such z-comparisons, it is often possible to make generalizations of the z-values of the remaining pixels in the triangle without individually analyzing their z-values.